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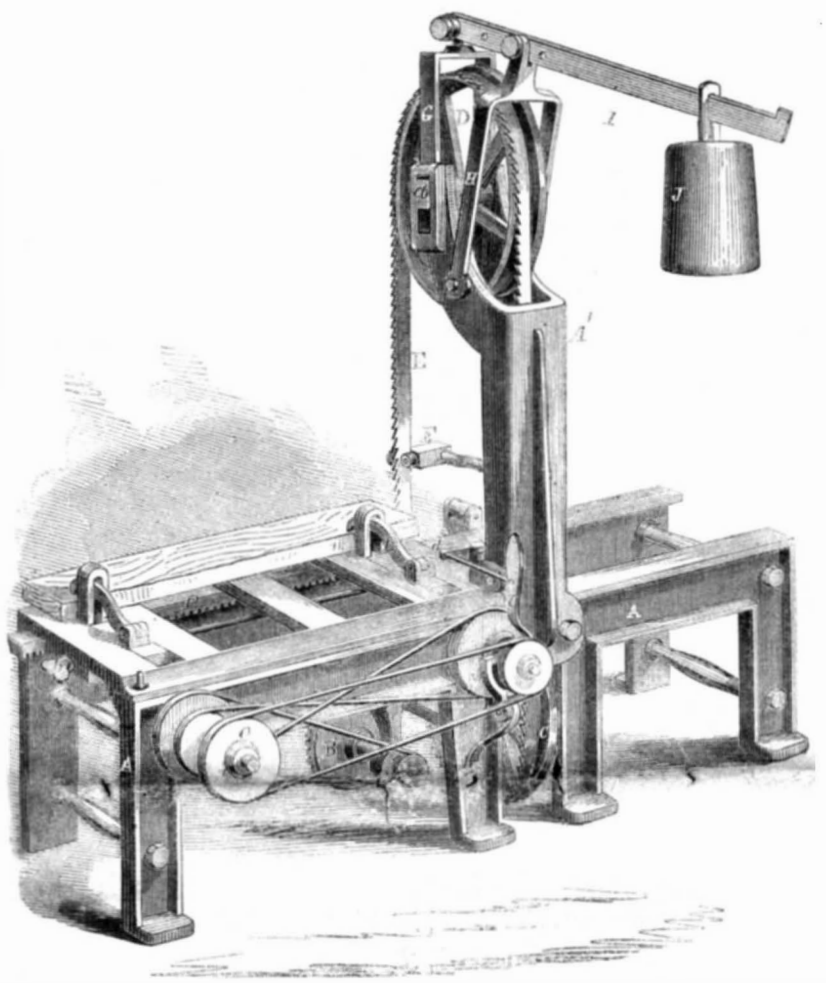
The Peach Tree.

This tree is a native of Persia, and has been cultivated in Asia and in the south of Europe from time immemorial. Linneus divides the peach into two varieties, the "true peach" and the nectarine—the one separates freely from the stone, the other does not, and is generally designated as the clingstone. There are several varieties of these two divisions, some have smooth and some rough skins; and there are instances on record of peaches and nectarines occurring on the same branch. It was introduced by the earliest colonists and found well adapted for our soil and climate a change, however, has come over the peach during the last twenty years; it does not seem to be so hardy nor so long lived as formerly; it is subject to unfavorable atmospheric influences and also to the attacks of insects which soon diminish its productive power and shorten its days. The cause of this is not well understood, and a preventive for its rapid decay has not yet been discovered. During the past two years the peach crop has been an entire failure both in quantity and quality, and large peach orchards in various sections of our country, once yielding good and abundant crops, are now blasted and barren. A discovery which would restore this luscious fruit-bearer to its former vigor and fruitfulness would be of incalculable importance. At this season of the year—entering upon spring—we urge our horticulturists to give this subject that attention which it deserves.

As peach trees blossom early in the season, they are subject to injury from late frosts; this was the case in many districts in 1858. Dwarf trees may be protected from such frosts by netting laid over them, but it would be too expensive thus to cover large trees. The small green-fly and mildew often attack peach trees, and very few persons ever try to remedy this evil, although tobacco and sulphur water is a perfect cure. Take a pound of tobacco, and pour five gallons of boiling water upon it, pour off the clear, and stir in two pounds of sulphur. When cool, apply it to the trees with a syringe or a garden-engine in the evening, then shower the trees next morning with soft water. Such applications may be required twice a week for three weeks before the cure is fully effected, but by perseverance the desired result will be secured. Most farmers seem to act upon the principle that if their fruit trees do not take care of themselves, they may die if they choose. This is not the feeling, for cultivating peach trees, at least. Some strenuous efforts should be made to restore this tree to the condition and character which it once possessed.

CAMERON'S SELF-ADJUSTING BELT-SAW.



The principal reason why belt-saws are not in more general use is because, in many machines hitherto devised for carrying them, there has been something faulty about the arrangements which compensated for the expansion and contraction of the saw as it heated or cooled. That the belt-saw is really efficient and of great utility, a moment's consideration of the following points will show:

There is no time lost in the upward motion of the saw, as in reciprocating ones, the belt cutting continuously, the kerf being less than half its diameter, thus saving power, and the power is capable of being used more advantageously than in a circular saw, which may be considered as a lever, working to a disadvantage and throwing great strain upon the arbor, and the kerf is less than one quarter the width with a belt that a circular requires. Some persons not versed in the adhesion of substances to each other, especially the "hug" of belts on pulleys, are inclined to think that the belt would be apt to allow the driving wheels to slip under it and not rotate it when there was any work on, especially if the surface of the wheel be polished like the belt itself. This is a fallacy as our mechanical readers well know, and the adhesive power of polished steel to polished iron, when one is a band and the other a pulley, is very great; more than this, if the belt be 6 inches in diameter and the circumference of the wheel be 18 feet there would be an atmospheric pressure of nearly ten tuns making the belt "hug" the pulley. The steel does not easily lose its elasticity from the motion; and every tooth comes in for its share of the work unlike the reciprocating, in which only two feet or less is of use; when a belt-saw breaks, it can be spliced easily and thus a saw may be thoroughly used up, and not have to be thrown away in the event of an accident.

This narrowness of kerf, too, is an item of great importance. The assignee (a cutter of lumber) informs us that he has now at his mill a belt-saw, a gang of reciprocating saws, and circular saws, all running, and that he can get as much lumber out of 400 feet of timber with the belt-saw as he can out of 500 by either of the other ones. From these observations it will be seen that we have an object in view, and it is to call the attention of our readers to the subject of our engraving—a perfectly self-adjusting belt-saw—invented by David A. Cameron, of Butler, Pa., and patented by him, March 21, 1854. He is since deceased, and John Whitbeck, of Warwick county, Va., has now the control of the patent.

The adjustment is effected in the following simple manner:—The upper belt wheel, D, has its bearings in boxes, *a*, attached to a frame, G, and capable of sliding in grooves in the end of the standard A'; this frame, G, is suspended from a lever, I, whose fulcrum is another frame, H, also capable of moving; a weight, J, can be placed on any part of I, to exactly balance the strain on the saw, E, and produce the proper tension for driving it through the work with ease. As the saw expands the weight, J, draws the upper wheel up and tightens the saw, and the moment it contracts from cooling, it allows the wheel to accomodate itself to the shortening. Each belt wheel, D and C, (the lower one, C, receiving the power) is provided with an adjustable rim that can be adjusted by screws to keep the teeth of the saw always off the wheels. A guide, F, above the timber and one below keeps the saw straight while cutting.

The other parts of the machine are similar to many other sawing machines; the frame, P, carrying the timber to the saw, the timber being held by dogs, L, that are moved to regulate each cut by the shaft, *b*, and have cog-wheels, and a rack on their under surface. The frame, P, is moved, and the timber fed to the saw by the wheel, B, the pulleys, N, O, and a cog-wheel and rack, the frame bearing the rack. A pin at each end of P, catches a little lever, *d*, when it has got to the end of its path, and throwing *d* out, moves the lever, M, and the shipper attached to it thus instantly changing the motion of the frame.

The whole is remarkably simple and well arranged; any further information will be given by the assignee upon being addressed as above. His Post Office address is Yorktown, Va.

A New Hydro-carbon.

Paragraphs have been floating the rounds of the press for a year or two past, in regard to a peculiar bituminous mineral said to be found in great abundance in some parts of South America.

Mr. F. H. Southworth, of Rio Janeiro, has recently sent us a sample of this mineral by the hands of W. N. Ely, of Stratford, Conn. In color it is a light brown, break with clear lines of fracture as if formed by successive deposits, and has the appearance of lime saturated with crude oil and submitted to a moderate pressure. It burns readily when held to a jet of lighted gas, and gives off a smoky flame and emits an odor resembling bituminous coal, leaving a residue principally of lime. Mr. Southworth informs us that it has been known to exist for five years past on the banks of the navigable river Acarahy, about 40 miles south of Bahia. He applied it for the first time to the manufacture of gas, in April 1858, and it produces about 7 cubic feet to the pound—a greater amount than is obtained from any cannel coal known to us. It contains, however, too much of free carbon to burn with a clear flame, but in making gas by the "Aubin system" in Rio, Mr. Southworth introduces minute jets of steam into the retort, the oxygen of which unites with the fixed residue, and liberates sufficient hydrogen to make a clear and smokeless light. He has been awarded by the Emperor a large mining grant for several years, and millions of tons can be obtained with very little trouble. He believes it will yet be employed largely for distilling coal oil, and that it will also become a substance of large export to various countries for fuel.

It is undoubtedly a rich bituminous substance, but it is far more bulky than cannel coal, and never can be exported so cheaply in our judgment. As a cleanly material for burning in parlor grates, we have never seen any asphalt to equal it.

CURIOUS CALCULATION.—A coal miner in Lancashire has made the following calculation. The quantity of coal raised annually in Great Britain is 68,000,000 tuns; if this were excavated from a mine 6 feet high and 12 feet wide, the excavation would be 5,128 miles, 1,090 yards in length. Or, if formed into a solid globe the diameter would be 1,549 feet. Or if piled into a square pyramid, whose base was 40 acres, the hight would be 3,356,914 feet.

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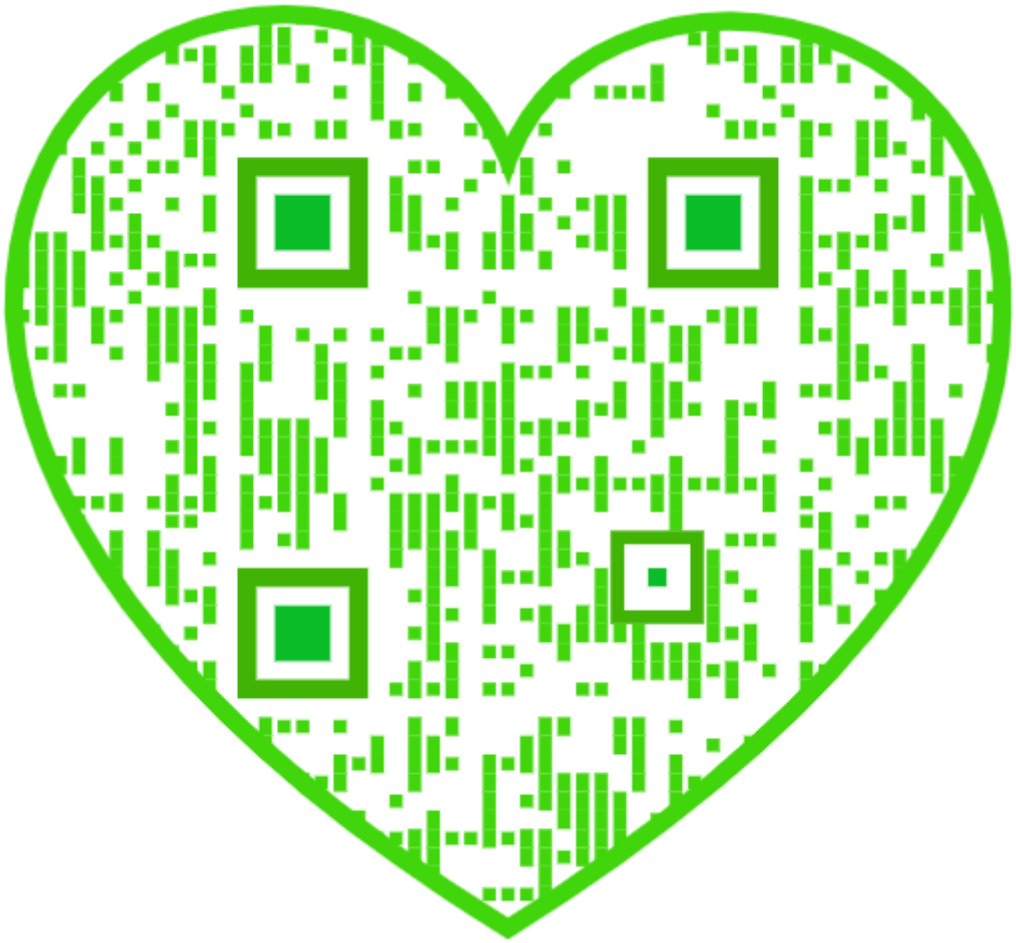

Issued from the United States Patent Office

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[*Reported officially for the Scientific American*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

SCYTHE SNATHS—S. B. Batchelder, of Lowville, N. Y.: I claim the arrangement of the hooks, D D, screw, E, ring, C, and plate, B, with slot, F, and sliding block, G, the whole being constructed for joint operation, in the manner set forth and described.

WHEELS FOR TRACTION ENGINES—Wm. Bray, of Folkstone, England. Patented in England Dec. 31, 1856: I claim constructing traction engines with driving wheels, with blades or teeth, which are capable of being protruded and withdrawn, substantially as described.

SUBMARINE TELEGRAPH CABLE—F. J. Bridges, of New York City: I claim the braided or plaited coat covering, or layer, for conductors, cords, or cables, for electric telegraphic purposes, as set forth.

METALLIC BANDS FOR BALING—George Brodie, of Little Rock, Ark.: I claim preparing the hoops or bands for tyeing before they are passed around the bale, by bending one or both ends of the hoops or bands, and placing in the inside of each band a suitable prepared metallic pin similar to those I have already described, around which pins the bent end of the hoops are securely pressed, for the purpose of keeping the pins in place, and also making the ends of the hoops wider or thicker as the shape of the connecting links used may require.

I also claim forming the connecting links like those shown.

I also claim bending one or both ends of the hoop or band, as shown in Figs. 11 and 12, around the outer ends of the connecting link, thereby strengthening the ends of the link, and preventing it turning or getting out of place, and the tie from untyeing.

I also claim making metallic hoops for bending bales, with a tie on each side of the bale, for the uses and purposes expressed.

I also claim using strips of cloth, paper, or other suitable material, under the metallic hoops, as shown, for the purpose described, substantially as set forth.

FASTENING FOR SHIRT STUDS, &c.—Barnes Clayton, of Philadelphia, Pa.: I am aware that a fastening for studs has been used before, consisting of two vertically moving levers turning upon pivots in the back piece, and jointed to a sliding stem on the front piece, so that by simply pushing the latter inward, or pulling it outward, the said levers are caused to open or shut together accordingly, as in Wilcox's patent of April 14, 1857: therefore I do not claim such a combination of devices.

But I claim a stud fastening, consisting of the stem, e, rigidly fixed to the piece, d, of the back, that the vertically moving lever plate, f, and the screw stem, h, fixed to the front or ornamental part, A, the same being constructed and arranged to operate together as set forth, and for the purpose of fastening the stud in place, so that it cannot be pulled out or removed therefrom, without first rotating the screw, h, as described.

ADJUSTABLE DENTAL SWAGES—E. H. Danforth, of Jamestown, N. Y.: I am aware that compound dies, or dies composed of several pieces of metal clamped together, have been used for swaging sheet metal into form, and I therefore do not claim the compound swaging die; but I am not aware that in swaging sheet metal for any purpose, the grooves of sheet metal have been filled with malleable metal, and then the sheet subjected to complete or final swaging.

What I therefore claim is, forming the labial and the lingual curve of dental plates, for the inferior maxillary alveolar ridge by swaging it into form with the compound die and malleable plates in the curve of the plate, as set forth.

INSTRUMENT FOR ASCERTAINING THE DISTANCE BETWEEN ITSELF AND THE TARGET, WITHOUT CHAINING—B. D. Villeroi, of Philadelphia, Pa.: I claim the addition, by means of a screw of a tube, containing the lens, and divided throughout its whole length by a vertical partition, or diaphragm. At the extremity of this tube next the eye-piece is placed a ring containing a bisect lens, D E G K, the two halves of which are equally inclined on opposite sides of the vertical plane, perpendicular to the axis of the telescope.

CORN-HUSKERS—H. A. Doster, of Bethlehem, Pa.: I claim the arrangement and combination of the lever, D, with the adjustable roller, A', so that when the roller, A', is adjusted, the distance between the cam, i, and the fulcrum of the lever, D, will be correspondingly changed, as and for the purpose shown and described.

[This invention relates to an improvement on a corn-husking device, patented by this inventor and S. A. Skinner, Nov. 17, 1857. In the former machine, two rollers were employed, armed with teeth and grooved circumferentially so that as the rollers were rotated, the husks would be stripped from the ears, and drawn between the rollers, the latter repelling the denuded ears in consequence of the angle of the bite being too small to grasp the ears, which were fed by hand, thus rendering the attendant liable to being injured by the rollers catching his hand. The present invention consists in the use of a guard-board attached to the machine and arranged relatively with the rollers, so that the ears of corn may be fed to the machine with great facility, and as rapidly as the machine can husk them, without subjecting the attendant to the least danger.]

WEATHER STRIPS—John L. Faber, Senr., of South Hadley, Mass.: I claim, first, The bar G, in combination with the parallel vibrating links, a a, when said bar is so arranged as to fall by its own weight, and be forced against the door by the closing of the latter, as set forth.

Second, The combined arrangement of the several strips, and their attachments, to close up the frame sides of the door, as described.

FILTERS—John Fitch, of Seneca Falls, N. Y.: I do not claim the ordinary cask or tub filters, with pot or reservoir filled with charcoal, or other filtering material, the same having been known and used.

But I claim the combination of the cylinder, B, constructed and partly filled, as described, with the outside case, A, having the perforated plates and the filtering material disposed and arranged as described, by means of which the fluid to be filtered is made to pass through the filtering material for a greater distance, and a more perfect purification effected. I also obtain, by the same combination, a convenient mode of cooling the fluid, and also of cleansing the filter, without deranging its parts, by means of reversing its action in the manner described, the whole constructed and operating in the manner and for the purposes mentioned.

COFFEE MILLS—R. B. Fitts, of Philadelphia, Pa.: I am aware that a single crushing cylinder has been employed before, in combination with a horizontal grinding cylinder, fitted with an adjustable shell or concave, the said crushing cylinder rotating at a slower speed than the grinding cylinder, for the purpose of crushing or grinding coffee; therefore I do not claim such a combination.

But I claim the cylinders, B and B, in combination with the grooved cylinder, C, and its adjustable concave, D, the whole being constructed and arranged together beneath the hopper, A, so as to operate in the manner and for the purpose set forth and described.

FLY-WHEELS FOR ROLLING MILL MACHINERY—Jacob Geyser, of Alleghany, Pa.: I do not claim any particular shape, or form, or material for the construction of the rim of a fly-wheel, as great variations can be made in this respect.

But I claim constructing the rim of a fly-wheel hollow, with partitions, in such a manner that when the heavy materials are piled in, laid in concrete, it may be held stiff and steady, as described.

I claim using any heavy and hard material, along with suitable cement, to fill up such a rim, when constructed and operating as and for the purpose described.

LETTER ENVELOPES—Emanuel Harmon, of Washington, D. C.: I claim the method or process of preparing letter envelopes, ready ruled in the process of manufacture, substantially in the manner and for the purpose set forth.

DOUGH ROLLING MACHINE—John Hecker and William Hotine, of New York City: We do not wish to be understood as making claim to the use of cylinders for rolling dough, as these have long since been applied to the rolling of dough.

But we claim the combination of an inclined endless apron for receiving and returning the dough, substantially as described, in combination with the cylinders for rolling the dough, substantially as described.

We also claim, in the above combination, the curving in of the apron around the upper roller, or the equivalent thereof, substantially as described, for the purpose of returning the dough to the feed table, substantially as described, in combination with the cylinders for rolling the dough as described.

And we also claim the rotating screen, as described, in combination with the arrangement of cylinders for rolling and working the dough, substantially as and for the purpose described.

And, finally, we claim, in combination with the rotating screen, as described, the hopper and apparatus therein, for insuring a regular supply of flour, as set forth.

FILTERS—A. Jaminet, of St. Louis, Mo.; I claim, first, Circulating the water to be filtered through tiers or courses of pipes, arranged within a drum, having a current of waste steam passing through it and then passing said water into separators for further circulation, and of depriving it of mud and other foreign matters.

Second, Arranging the separators, C C1 C2 C3 C4 C5, within the steam drum, B.

Third, Making the apparatus self-cleansing, at intervals, by operating the valves at the bottom of the separators and filterers, by levers, acted on by toothed disks, ratchet wheel and pawl, or their equivalents, actuated by the automatic movement of the clear water trough in tipping, or tilting, to discharge essentially as set forth.

Fourth, Controlling the automatic discharging action of the clear water trough, by means of a flutterer, or float, arranged therein, and serving, by connection with an unlocking lever, a stop piece and catch, or hook, to hold the trough from prematurely tilting.

MAKING ORNAMENTAL CHAINS—James Launcelot, of Cranston, R. I.: I claim the method described of weaving a chain from sheet metal, by forming the base of each link into a geometrical figure, and by bending each arm, longitudinally, at the same angle as one of the outer angles of the base, so that a cross-bar on the extremity of the next proceeding link shall, when bent down, bear against the angular side of two of the arms of the next succeeding link, and thereby enable the chain to withstand a strain nearly equal to the cohesive strength of the metal of which the links are formed.

MODE OF MARKING AND ORNAMENTING PAPER—Thos. Mackenzie and Albert Trochsler, of Boston, Mass.: We claim, as an improved article of manufacture, paper for writing, printing and other purposes, having indelible marks or designs stamped thereon, by condensing the fibers thereof by pressure, as shown and described.

[By this invention impressions of a similar kind, but more sharply marked than water-mark, can be obtained in paper after it has been manufactured. By it autographs, &c., that cannot be produced by the water-mark with any degree of accuracy, can be perfectly reproduced in the paper, so that the invention will become useful for the identification and prevention of forgery of letters or other documents, checks, bank-notes, or, in fact, any papers of value.]

MOTIVE POWER—Chas. Mans, of Danville, Pa.: I do not claim the use of wheels and pinions, driven by weights, nor two wheels gearing into the opposite sides of a pinion or third wheel, in order to distribute the strain on the teeth, for these devices are known.

But I claim the arrangement of the drums, D and c, wheels, E and c, pinions, P and c, fly-wheel, R, and sectional weights, w, when the whole are combined and operated as described.

BREECH-LOADING CANNON—James H. Merrill, of Baltimore, Md.: I claim, first, The combination of the breech-piece and frame, so that the former may move back and forth, and have its bore raised up and lowered on the latter automatically and fastened or locked, substantially as described.

I also claim, in combination with the screw, for running the breech-piece forward and backward, the mechanism for lowering and raising the rear of said breech-piece, substantially as described.

POST-OFFICE HAMMER-STAMP—Ezra Miller, of Janesville, Wis.: I claim a Post-Office marking stamp, which has its handle running parallel, or nearly so, with its marking face, or faces, substantially as and for the purposes set forth.

DEVICE FOR EQUALIZING THE TENSION OF WATCH SPRINGS—J. J. Parker, of Marietta, Ohio: I claim making and constructing a barreled cog-wheel, or drum, for time-pieces, or for other purposes, so as to equalize and regulate the power of a spring, in manner and form, as substantially set forth.

ENVELOPE—S. E. Pettee, (assignor to the North American Paper Bag and Envelope Manufacturing Company) of Philadelphia, Pa.: I am aware that an envelope has been made, with a narrow fold at the side; but in that case, the fold is carried down the sides of the back and flap, as well of the body of the envelope, and the fold of the back is pasted to that of the body, having a stiff projecting piece in the interior of the envelope, very inconvenient and objectionable, totally useless and unnecessary; such a form I distinctly disclaim.

But I do claim the form of envelope blank described and represented, whether out from a continous roll of paper, or from separate sheets.

FAUCET—James Powell, of Cincinnati, Ohio: I claim the described arrangement of the cam, F, flanges, J and J', longitudinal slot, i, and spurs, K, combined and operating in the manner and for the purposes set forth.

ROTARY ENGINE—T. T. Prosser, of Fond du Lac, Wis.: I claim a wheel with a spiral passage diminishing in size, from the center to the periphery, in the purpose substantially as described.

HEELS FOR BOOTS AND SHOES—Joseph Read, of Philadelphia, Pa.: I am aware that composition heels have been made and used before, but their construction and mode of application heretofore involved either an increase of weight over leather heels, or an objectionable difficulty in securing them properly in position on the boot or shoe, which has prevented their adoption by the trade.

I therefore do not claim, broadly, making composition heels for boots and shoe, nor do I claim the described mode of securing them to the soles.

But I claim a composition heel for boots and shoes, consisting of the composition, A, molded into the form of a heel, with the concavity, m, in the upper side of the same, as described, and the leather lift, or bottom piece, B or B', in combination with the leather edge piece, c, applied and secured thereto, substantially as set forth, the said heel being adapted for subsequent application to a boot or shoe, as described, and for the purposes specified.

AMALGAMATOR—H. P. Russ, of San Francisco, Cal.: I claim portable or movable cups or cones of copper, galvanized, or amalgamated with quicksilver inside, or manufactured of other materials, such as wood, cast iron, etc., to be placed in holes in sluice boxes, or other apparatus used in mining for the precious metals, substantially as and for the purposes specified.

PUMP—L. B. Schafer, of Baltimore, Md.: I am aware that shear levers have been used in different machines, and I therefore do not claim any part of my ship pump separately and for itself.

I claim the arrangement for operation together of the pump barrel, A, shear, C, link, D, hand brake, E, and piston rod, I, substantially as and for the purpose set forth.

BRICK MACHINE—J. T. Schuffenecker, of Keokuk, Iowa: I make no claim to the hopper of the machine, nor to the manner of grinding and working the clay. But I claim, first, The safety openings, D, in combination with the quadrant, C, arranged and operating in the manner and for the purpose specified.

Second, I claim the shutter, B, operated by the fork, R, spring, S', and bar, L, in the manner represented.

Third, I claim the manner of leveling the mortar in the molds by means of the two scrapers, A and A A, as shown in the specification.

INSTRUMENT FOR ENLARGING PHOTOGRAPH—David Shive, of Philadelphia, Pa.: I do not claim broadly the use of an illuminating lens, in connection with a camera.

But I claim the arrangement of the illuminating lens, F, in the usual open end of a photographic camera, supported in connection with the adjustable paper holder, C, upon a stand, D, substantially as described, so as to operate in the manner and for the purposes specified.

CASTING AND ANNEALING ARTICLES MADE OF SCORIA—William H. Smith, of Philadelphia, Pennsylvania: I do not confine myself to the precise details described and represented, as various modifications can be made in the process and apparatus, without affecting, substantially, the principle of my invention. Nor do I claim any of the processes and apparatus, separately, except as stated below.

I claim, first, The construction and use of the horizontally revolving casting wheel, B, for facilitating the casting of slag and similar mineral products.

Second, The construction of an annealing chamber, having various modes of retaining and regulating the heat therein, viz: by a series of dampers, by the construction of grooves and troughs in the walls, in connection with the flanges and dippers of the bed, D, with or without the use of sand, by the devices at the ends of the wagons, and by the uses of the ante-chambers, substantially as described.

Third, The use and combination of a series of rollers, with a traversing bed, substantially as described for imprinting an entire pattern of different colored figures.

Fourth, The construction and employment of segmental sliding molds, as shown, or of similar character, and the mode of arranging and working the same, substantially as described.

GAS BURNING STOVE—James Spear, of Philadelphia, Pa.: I claim the combination of the sled, E, in the door frame, F, with the ring, M, and the cylinder, B, and the body of the stove, A, as constructed in the manner and for the purpose set forth.

APPARATUS FOR SKIMMING THE SURFACE OF THE WATER IN STEAM BOILERS—A. M. Sprague, of Mobile, Ala.: I claim the surface skimmer, B, constructed, arranged and operating substantially as described and for the purpose of removing the sedimentary water from the upper water surface of steam boilers.

CAR COUPLER—C. E. Stevens, of New York City: I claim the combination of the yielding support within the mouth of the aperture of railway car boxes, with one or more blocks inside and the annular flange outside the said boxes, when said parts are arranged in relation to each other, substantially as described, to effect the coupling of the boxes automatically, by the action of straight links and locking bolts, in the manner specified, and for the purposes set forth.

MODE OF FASTENING SHEETS OF PAPER TOGETHER—E. S. Swartwout, of Utica, N. Y.: I am aware that metal plates have been used for fastening in various ways, in the construction of book clasps, carpet bags, harness, etc., I do not therefore claim, irrespective of construction, any such devices.

But I claim the new and improved article of manufacture, the metallic clasp, A, in combination with the perforated metal plate, B, for fastening together legal and other documents, constructed as described, in the manner and for the purpose substantially as specified.

CHEESE PRESS—Charles Taylor, of Little Falls, N. Y.: I claim, first, Attaching the one end of the press bars, l l, to the bottom of the box, K, and the other end of the crank pin on the wheel, L, as set forth, whereby I am enabled to shorten the movements of the follower, and have an excentrically operating press, compactly arranged, as described.

Second, I claim the spring bed piece, q, and the spring, P P, acting upon the wheel, L, on the extreme upward movement of the follower, and thus upholding the follower, as described.

FILTER—Louis Tilliers, of West Morrisania, N. Y.: I am fully aware of the existence of what is known as the "Phelpses Patent" granted in 1855, in which the claim is for the uses of discs for filtering purposes, formed of rolled wire gauze. I am also aware that charcoal and other materials I employ, are not new, for the same purposes; but I am not aware that an apparatus constructed in the peculiar manner mine is, has ever been known, or used prior to my invention of the same.

I therefore a Hygienic Purifier, constructed in the manner described, operated as described, and for the purpose set forth.

PADDLE WHEEL—Nathan Thompson, of Bridgeport Conn.: I claim the arrangement and combination, in the manner shown and described, of the triangular floats, D, with the arms, C, to prevent the formation of the vacuum, the lifting of back water, etc., as set forth.

[This improvement in paddle-wheels consists in making the floats of the form of a triangular prism, by which many advantages are obtained over common flat floats.]

METHOD OF SECURING BITS IN THE STOCK—William Tucker, of Blackstone, Mass.: I claim the application or arraugement of the screws, d e, and the segmental button, g, with respect to the bit, or boring tool socket, and to operate with or on the tool substantially as specified.

CARPET FASTENER—C. F. Spencer, of Rochester, N. Y.: I claim a carpet fastener made of a single piece of plate metal, of triangular or three-pointed form, one point, b, serving as the shank, to be driven into the floor, another point, d, as the hook for receiving the carpet, and the third point, a, as a head so shaped as to enable the fastener to be driven with facility into the floor, all substantially as specified.

SHINGLE MACHINE—W. P. Valentine, of Fond du Lac, Wis.: I do not intend to limit myself to the especial mechanical devices employed in my machine, as these may be somewhat varied and yet accomplish the same result. I am aware that small chisels have been placed upon the convex side of a thick saw flange for the purpose of cutting away splinters, to prevent the latter from catching behind the spreader.

I am also aware that single machines have been fed by hand at a varying rate of feed.

I claim, first, varying the rate of feed, by the mechanical means set forth, so as to feed the lumber to the saw, more rapidly, during the first half of a cut, when the saw has the highest velocity, and slower during the latter half of a cut, in order to keep the saw constantly at a uniform velocity.

Second, I claim the use of the two carriages, P and P', operating in the particular manner described, for the purpose of cutting alternately, on both sides of the saw, thus keeping the saw constantly at work, and preventing the loss of time, or power, whilst the lumber is returning with the carriage to be ready for the next cut.

Third, I do not claim the concavo-convex saw, or the planes upon its surface, as separate mechanical devices; but, I claim the concave saw and the planes in combination with the saw carriage, for giving rake to the saw, and for sawing and planing shingles at a single operation, substantially as described.

Fourth, I claim the arrangement of springs, S S, and S' S', the head blocks, R R, and R' R', and the spreaders, C C, and C' C', for alternately holding and dropping the shingle block, substantially as set forth.

MACHINE FOR HEADING BOLTS—B. C. Vanduzen, of Cincinnati, Ohio: I am aware that toggles have been used for operating punches, dies etc., and arranged in various ways, and I therefore do not claim, broadly, the use of toggles for operating the heading die, F, and die, J.

But I claim the arrangement and combination of the adjustable spring fork rod, G, lever, H, upper lever, b, and heading die, F, substantially as shown and described, for the purpose of regulating the movements of the lever, H, and die, F, and controlling the size given to the head of the bolt.

[In this invention a peculiar heading device and clamp are so arranged that the blank while being headed may be firmly clamped, the clamps or dies being rendered capable of being adjusted so as to render sure a perfect contact with a requisite degree of pressure at all times, and the heading device so arranged, that it may be adjusted to form heads of different thickness and a requisite length of the blank of which the head is made, and commensurate with the size of the required head, allowed to pass with the recess or chamber of the die where the head is formed.]

ODOMETER—Haskel Walker, of Hartford, Vt., (assignor to himself and B. P. Driggs) of Fairlee, Vt.: I claim the peculiar arrangement of the parts thereof, by which an actuating tooth upon the hub of one of the wheels of a carriage will cause each revolution of said wheel to uuerringly impart a small portion of a revolution to the shaft, K, of the odometer whilst the spring, l, by its action against the faces of the angular portion of said shaft, will accurately govern and control the movements thereof, substantially as set forth.

CONSTRUCTION OF SAW TEETH—W. A. Wilson, of Berlin Falls, N. H.: I claim combining the planing with the sawing tooth, so that the cutting edge of the former shall be in rear of, and at about right angles to the back of, the latter having the throat between, as set forth and shown.

BRICK MACHINE—I claim the arms, B B, in combination with the slides, A A, provided with the lever, C, and tappet, c, for operating the molds, M, as described.

POT-HOLE COVERS FOR COOKING STOVES—L. E. Clow, (assignor to C. H. Ramson & Co.,) of Albany N. Y.: I claim a cover, or division plate, constructed of two perforated plates and the unperforated rim, or ring, as set forth.

IRON RAILROAD CARS—Joseph Davenport, (assignor to himself and C. M. Russell) of Masillon, Ohio,: I claim the combination with the platform or bottom of a railroad car, of a laterally and longitudinally supporting truss brace, when said brace consists of a four sided frame, s s t t, a series of transverse ties, B, and transvere diagonal braces, C C, a central longitudinal skeleton, or diagonally braced girder, A c d b b, and bearing plates, or shoes, D D g g, substantially as and for the purposes set forth.

[It will of course be safer for the traveling public if railroad cars can be constructed entirely of metal, consistent with durability, simplicity and lightness. By the use of this invention they can, and we shall hope to see some iron cars very soon.]

MOLE PLOW—W. P. Goolman, (assignor to himself, S. B. Morris and W. Hollingsworth) of Dublin, Ind.: I claim the arrangement substantially as set forth, of devices for producing or preventing lateral curves in a drain by a justing the presentation of the mole independently of the point of draft.

WATER CLOSET—Darius Wellington, (assignor to C. A. Wellington) of Boston, Mass.: I claim the arrangement and combination of the hollow valve rod, F, perforated at d d, cap, G, basin, B, pipe, H, tube, H, and reservoir, I, as and for the purpose shown and described.

[The object of this invention is to dispense with the mechanism hitherto employed below the basin, and substitute a simpler and efficient device for allowing the excrement to escape freely and also to retain the cleansing water at a suitable hight in the basin so that the soil pipe cannot become choked or any effluvia escape from it through the basin into the room in which the water closet may be.]

ADDITIONAL IMPROVEMENTS.

BEDSTEAD FASTENING—Oliver Robinson, of Rochester, N. Y. Patented Dec. 28, 1858: I claim constructing the locking bolt, A, of a flat or rectangular form, so as to work against the surface of the sideboard C, to obviate the reducing of the bearing surface of the recess of the wrench, B, and hold the parts to the required position without the usual guide-pin, substantially as described.

I also claim elevating the hooks, j, above a right line through the center of the bolt, A, substantially as and for the purpose set forth.

I also claim uniting the point, i, of the circular wedge with the stock of the wrench, whereby greater strength and a better adaptation to the recess or seat of the same is secured, substantially as described.

I further claim adapting the cam, l, or raised part of the wrench lever to pushing and holding forward the bolt for ready connection with the pin, f, substantially in the manner described.

RAILROAD CAR STOVES.—James Spear, of Philadelphia, Pa. Patented June 1, 1858: I claim the combination of the openings, A, in the side-plate, F, with the back fire-plate, B, in connecting tube, C, with the center plates, D and E, constructed and combined in the manner and for the purpose set forth.

Second, I claim the openings, f f', in side-plate, F,

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with the center plate, F, constructed in the manner and for the purpose set forth.

Third, I claim the flue or opening, L L, from the front plate, H, to the top plate, I, constructed in the manner and for the purpose set forth.

COOKING STOVES—James Spear, of Philadelphia, Pa. Patented July 7, 1857: I claim, first, The combination of the cone damper, J, with the smoke-pipe, H, and the top plate, D, constructed in the manner and for the purpose set forth.

Second, I claim the combination of the head or deck collar, L, with the cold air pipe, G, and the smoke-pipe, H, constructed in the manner and for the purpose set forth.

MACHINE FOR MAKING AXES—Jonas Simmons, of Cohoes, N. Y. Patented March 1, 1853: I claim the groove, G, the arm, X, with the toes, T or T2, in combination with each other, substantially in the manner and form and for the purpose set forth in the specification.

DESIGNS.

PARLOR COOKING STOVE—David Hathaway (assignor to Fuller Warren & Co.), of Troy, N. Y.

COOKING STOVE—A. C. Barston, of Providence, R. I.

INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of $5. A sketch and description of the invention only are wanted to enable them to make the examination. Address MUNN & COMPANY,
No. 37 Park-row, New York.

Science of Electric Conductors.

MESSRS. EDITORS:—I understand, from what has been published on the subject, that the reason why the electric current is retarded in an ocean cable, and why telegraphing is so slow under water, is owing to the cable being formed with a wire or metallic sheath outside of the gutta-percha insulating material. It is said that this construction of cable converts it into a long Leyden jar, that becomes so charged as to resist the subsequent impulse of the electric currents required for making words and signs. If I am right, then this resistance will be avoided by dispensing with the outer wire shield, and making the inner wire stronger, by Mr. Allan's plan, as noticed in the last number of the SCIENTIFIC AMERICAN. R. R.

[While Mr. Allan's cable seems to embrace a correct principle for decreasing the resistance by enlarging the size of the conducting wire; it contains no feature for preventing induction entirely, although he does not use an outer metallic sheath. Our correspondent is mistaken in reference to his views as to the cause of the resistance—called *induction*—in submarine cables. This will exist in all cables having a metallic wire inside, and an insulator like gutta-percha, or any other such substance, between the wire and the water. A Leyden jar is formed by surrounding an insulating substance, like glass, with a conductor on each side, and arranging them in such a manner as to receive electricity. The gutta-percha of the telegraph cable is the substitute for the glass in the Leyden jar; the wire inside is the metallic conductor, and the water outside being also a conductor, it converts the cable into a long narrow Leyden jar, although no wire sheath may be used. The electric jars now employed for experiments are coated inside and out with metallic foil, but the principle is the same whether water or metal is used for the conductor. There is no known principle whereby the rapid transmitting character of a submarine cable can be improved, but by enlarging the interior conducting wire. A most gross violation of sceintific principles, was committed in making the Atlantic Cable with a very small conductor, and the reason we will endeavor to explain. A small wire on a long circuit requires electricity of great intensity to overcome the resistance; this intensity causes induction in the same proportion. If we double the diameter of a conducting wire, its mass is quadrupled; it has four times the conducting capacity. With such a wire, the intensity of the electric current can be lowered one-fourth, and the inductive resistance will be thereby diminished in the same ratio.

We have thus explained the law in relation to induction in submarine telegraph cables, in such a manner that all may understand it. From these remarks it will be apparent, that the reports which were propogated a few months ago, about Hughes' and other instruments being capable of transmitting messages rapidly through the Atlantic Cable, were entirely devoid of truth. Neither rapid nor correct messages can ever be sent through long lines of submerged wires, unless these are of large diameter and well insulated. We have seen it stated in a contemporary that a deep sea cable is now being manufactured for Professor Rogers, at Baltimore, and that its whole diameter will only be one quarter of an inch—the wire being a very small copper conductor. Such a cable will be constructed upon the most unscientific principles and must prove a failure. This is a subject with which many men, professedly scientific, appear to be perfectly ignorant.

Coal Oil for Lubricating Machinery.

As practical information is the most reliable, we take pleasure in publishing the following, as nothing on the subject of such an experimental character has been presented to us before:—

MESSRS. EDITORS:—As you are devoting some attention to coal oils in the columns of the SCIENTIFIC AMERICAN, it may interest some of your readers to have the practical experience of one who, for over two years, has used the "lubricating oil."

My plan is to submit everything to a practical test claiming to be an improvement, and happening to be in Louisville, Ky., at the the time of the receipt of the first barrel, I procured a small quantity, and used it upon light machinery, where it was entirely satisfactory. A short time after, when getting heavy machinery, I was told that it would not work well on any but light machinery, but on testing it on an engine-shaft with 3,500 pounds on it, I found it to work just as well as on the lightest machinery. After a continued use for fifteen months on the same machinery, I find it perfectly free from gum, the polished portions wiping off as clean as though they had not been oiled. Journals becoming hot from inattention have been *run* until they were cool with nothing applied but the coal oil. In every respect, my experience pronounces it superior to the best sperm for oiling machinery. J. L.

Smith's Mills, Ky., March, 1859.

Our correspondent's experience, however, does not meet all the conditions of proof in regard to the superiority of such oil. We believe the only correct method of testing oil is by the machine adapted for the specific purpose, called the "oil-tester."

Graphite for Timber.

MESSRS. EDITORS:—I have read many articles in your paper on "the preservation of timber," upon which subject I submit the following. In regard to the proper period for cutting, the writer has not such knowledge as would authorise him to speak decisively, and he will therefore leave that point to the better informed.

But the proper period for cutting being determined, and if the logs be allowed to soak until the decaying influences within shall have been extracted, timber can be preserved against the injurious action of the atmosphere, by being properly covered by that mineral carbon, *graphite*. This mineral, being the purest carbon, is an anti-septic of the strongest character; it adheres well, and is insensible alike to heat and cold, to acids and alkalies; and it neither contracts nor expands under the influence of weather. It will exclude moisture and worms, for worms will no more attack graphite than they would charcoal. Roofs painted sixty years since with graphite, do not require repainting. A post properly covered with graphite and planted in the earth with graphite close around it, would last indefinitely, if properly prepared before painting. If the paint be properly made and properly applied, it will form a coating as bright and polished and smooth as burnished steel, and if thus applied to the bottoms of vessels, neither grass nor barnacles will adhere, and the vessels will glide smoothly through the waters.

The French Government having, by experience, found this mineral to be the best preservative of iron from rust, the Marine Department has issued a general order directing ordnance to be covered with it. Graphite is the basis of the "Lacker" which is used in our navy; the less there is of anything else in it, except graphite and pure linseed oil, the better. P. G.

Philadelphia, March, 1859.

Unreliable Recipes

MESSRS. MUNN & CO.:—Having got a recipe out of a recipe-book for making blue ink, and being curious to try the experiment to make it, I tried it but found it did not answer.

The recipe runs as follows: "Disolve indigo in sulphuric acid, and dilute it with eight times its weight in water." I mixed all up as stated above and found the acid to leave the paper white all around the writing, and the following day the water was at the top and the indigo at the bottom of the bottle.

Can you inform me through your correspondence column, how I can mix it so as to make it come out right? And oblige,

Yours respectfully,
H. D. WILSON.

St. Louis, Mo., March 16, 1859.

[We publish this for the purpose of giving a few words of advice, as we frequently receive letters of this character. A very great number of the recipes and processes described in books, are unreliable. Their authors appear to have been mere collators, not practical chemists—hence their ignorance of the subjects which they treat of. Our correspondent can make good blue ink from sulphate of indigo, if he neutralizes the acid it contains with chalk. The following is the proper method of making it:—Take four ounces of strong sulphuric acid, and add gradually to it an ounce of finely pulverized good indigo, stirring the mixture well for two or three days. Now add four ounces of water, then chalk, until effervescence ceases. The clear liquid is now poured off, a little dissolved gum added, and the ink is fit for writing. The fibers of cotton or linen of which paper is made, have no affinity for the sulphate of indigo, hence the failure of our correspondent's ink. A blue ink superior to that described can be made by disselving ground Prussian blue in a weak solution of oxalic acid, and adding a little gum arabic.

The Climate of Australia.

There are days and, in some years, whole weeks together, of delightful weather, cool and bracing as the spring in England, but more exhilarating. Excepting about twenty-five extremely hot days, and sixty disagreable wet and cold days, the weather throughout the year is indescribably pleasant, the air is balmy and bright, scarcely a cloud is visible, and the sun looks down from the deep blue sky in unveiled splendor. Day and night are of equal length throughout the year. The sun never remains above the horizon more than fourteen and a half hours, or less than ten and a half; and as twilight does not linger in these latitudes, the changes from day to night and from night to morn, are to Englishmen unpleasantly abrupt. The nights are enchanting. The southern constellations shine forth from the hard dark heavens in unrivaled brightness, and the halo-ed moon pours her chastened radiance on the plains and hills with such refulgence that everything for miles around is distinctly visible. The light of both the sun and moon is more intense than in Britain. I should say the difference is as five to three.—*F. Lancelott, Esq.*

ALCOTT'S Concentric Lathes for Turning Chair Rounds, Hoe Handles, &c., are no longer sold by us. Parties wishing to purchase these lathes must, in future, order them of S. C. Hill, No. 12, Platt street, this city.

Bottles to Prevent Poisoning.

A bottle to prevent accidental poisoning has recently been patented in England. Its design is peculiar, and as it is intended solely to contain poison, there is no danger of mistaking the character of its contents. The bottles are provided with an entirely new contrivance, the effect of which is to make it impossible to pour out the contents otherwise than very slowly. The very deliberate and cautious action which is produced will, it is believed, prevent anyone from taking over-doses of medicine; while it is difficult to imagine a case in which a person could pour out and take the whole contents of one of these bottles in mistake for something else.

Insoluble Silicate for Wood.

There can be no doubt but the silicate of soda applied to wood renders it incombustible, and were it not soluble in water, and liable to be washed off with rains, it would be well to coat all wooden structures with it. To apply it for such purposes, and to make it insoluble is a desideratum. This can be done as follows:—Soak the articles to be coated in the silicate of soda, or if they are too large to do this conveniently, then apply it with a brush, so as to fill all the pores up. When dry, wash it with a solution of the chloride of calcium. This causes an insoluble silicate of lime to be formed in the pores of the wood, which adheres to it, and also the chloride of soda (common salt), which is washed away.

Literary Notices.

NEW AMERICAN CYCLOPÆDIA, VOL. V.—CHA-COU.—D. Appleton & Co., New York.—In noticing this work, as each volume makes its appearance upon our table, it is somewhat difficult to avoid making use of nearly the same expressions that we have employed on former occasions, as each new volume only tends to confirm the high opinion we have already formed of it, and strengthens our faith in its able editors. In the present volume, the "Life of Henry Clay," by Horace Greeley, (as we learn from an appended list of contributors) is one of the best articles. It is a model of biographical writing, and the political and personal are so well blended that the reader takes the one with the other, and enjoys them both; rising from the perusal not with an impression of Clay as a statesman, orator, or man, but with an idea of him as a whole. This, we think, is the aim of true biography. The articles on Chemistry, Chromium, and similar subjects, are well written and up to the times, which is rather a rarity with what may be called "dictionary science." If the new American Cyclopædia keps as good as it is at present, during its growth to completion, no American need be ashamed of its national title, but rather point with pride to many new features which grace its pages, the best of which is its living biography. We should advise all who possibly can to become possessed of it, for it is a truly relishable work, and many an hour that would otherwise be wasted can be wiled over its pages, culling information, as the bee wanders amid the flowers, enjoying the beauties but accumulating the useful.

THE ANNUAL OF SCIENTIFIC DISCOVERY; A YEAR-BOOK OF FACTS IN SCIENCE AND ART.—Edited by David A. Wells: Gould & Lincoln, publishers, Boston. A portrait of Professor O. M. Mitchell decorates the volume for 1859 of this important annual. We are not aware that there is any work published on this continent which contains so much varied and useful information as the one before us. It forms a complete library within itself of scientific knowledge, and by its aid we are enabled to trace the progress that science makes in battling with the storms that ever assail the mariner who ventures on Sir Isaac Newton's Ocean of Truth. The magazines and periodicals of the whole world are made to contribute any record of a discovery that may appear through their columns, and from our examination of the book we should say that few, if any, facts had escaped the eye and attention of the editor. An obituary of persons eminent in science for 1858 is added, and a list of books, pamphlets, &c., on matters pertaining to science, and published in the United States during the same year, making it exactly the book that every one wants and should obtain.

THE AMERICAN JOURNAL OF EDUCATION.—Edited by Henry Barnard, L.L.D., published at Hartford by F. B. Perkins, and in New York by F. C. Brownell, 413 Broadway.—Our public and private educational arrangements are undeniably very good; but like all sublunary affairs, they might be better, and to collect information concerning other systems, to compare, select and suggest improvements is, we believe, the object of this quarterly. We say believe, because our opinion is founded on the contents of this number and not on the prospectus, and very efficiently and ably does it fulfil its mission. It is illustrated with steel engravings, and is, without exception, the best purely educational publication in the Anglo-Saxon tongue.

PECK'S ELEMENTS OF MECHANICS.—Published by A. S. Barnes & Burr, John street, New York.—This is a neat and excellent elementary work, by Professor Peck, of Columbia College, and is intended for colleges, academies and high schools. It is a clear and able exposition of the principles of mechanical philosophy, and is just such a class-book as has long been a desideratum for certain grades of scholars in our institutions of learning.

MECHANICS AND ENGINEERS' BOOK OF REFERENCE AND FIELD BOOK.—A new edition of this able and useful book—edited by Prof. Hackley, of Columbia College, and Chas Haslett, C. E., published by W. A. Townsend & Co., of this city—has just been issued. We are really glad to see it, as this is a good indication that it is appreciated as it deserves to be. It is formed for the pocket, and with it an engineer becomes a walking encyclopedia of valuable information.

THE DEMOCRATIC AGE.—Edited by C. Edwards Lester, 41 Park-row, New York.—The current number of this able magazine contains many excellent articles, "Our New Home in Italy" and "Prescott's Histories" being about the best. The number of small articles is very great, and they are all interesting and well written.

NORTH BRITISH REVIEW.—Published by Leonard Scott & Co., Gold street, New York.—The number for this quarter of the above periodical is very able and interesting. Its leader is on French Algerine literature. It contains a review of De la Rive's "Electricity," and several other accomplished essays.

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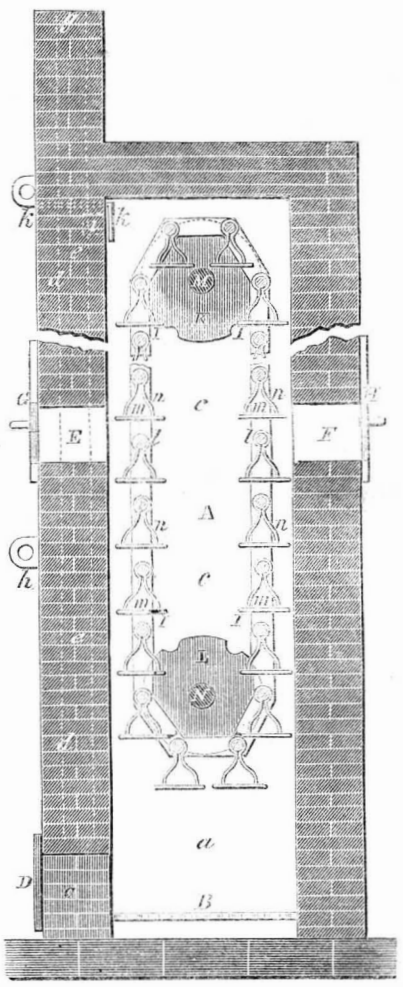
New Inventions.

Jennison's Oven.

The making of bread is undoubtedly one of the oldest of antediluvian culinary operations; and since those days how many batches have been lost or spoiled by baking would take two "calculating boys" and a few good mathematicians all their lifetimes to discover. But *we* cannot blame those good house-wives of antiquity, even if their husbands did, because we can appreciate the rudeness of the arrangements for baking which they possessed—a hot stone, or the ashes of a fire. Now-a-days, O shades of ancient bakers! happy hours have fallen upon your posterity, and the aspect of the times is changed; and you, ye dames of old! think of bread always properly baked, "done to a turn," as ye would say; for this is the age of progress, and even ovens have been improved so much that they can be relied upon for doing their work regularly and up to time. One of these improvements has been made by G. C. Jennison, of Ware, Mass., and forms the subject of the present illustration, which is a vertical transverse section of it.



A is an elongated hollow, vertical column, square or about so in horizontal section, and covered at top, the lower part of the space within the column being provided with a grate, B, extending across it. An opening, C, made through the front wall of the hollow column is furnished with a door, D, and constitutes the mouth of the furnace, all the space above being what may be termed the baking chamber.

Openings, E F, made through the front and and rear walls of the column and at the lower part of the baking space are respectively furnished with sliding doors, G H, and serve to give access to the shelves of the endless carrier and for the purpose of supplying the same with dough or other articles to be baked as well as for removing such as may have been baked.

In the front wall, *d*, are one or more flues, *e*, which extend upward from and open out of the upper part of the furnace, *a*, and terminate in the chimney, *g*, the flues, at or near their opening into the furnace, being respectively furnished with closing slides or valves, *h*. These flues have other openings or passages, *i i*, leading into them from the upper part of the baking chamber, each of the openings, *i i*, being provided with a closing slide, or damper, *k*.

Within the column, A, is a long endless carrier, I, which plays around sprocket wheels, K L, fixed on two horizontal shafts, M N.

From each of the hinge bars, *l*, of the endless carrier, a shelf, *m*, is suspended by arms, *n n*, which swing freely on the bar so as to enable the shaft by its gravitating power to always maintain its horizontal position at whatever altitude it may be or during the entire circuit of the carrier.

On the outer end of the lower shaft of the endless carrier, a cranked and notched wheel, may be fixed, a pawl, serving to arrest its motion or that of the carrier by being thrown into one of the notches of the wheel.

In operating with this oven, it is calculated to use anthracite coal, but it is by no means confined to that fuel, as there are various other kinds which will answer. After the upper dampers have been closed and the fire has been built in the grate, the volatile products of combustion will escape into the flues, by means of their opening at the lower ends, much of the heat from such passing upwards into the baking chamber, by which means it will become rapidly heated.

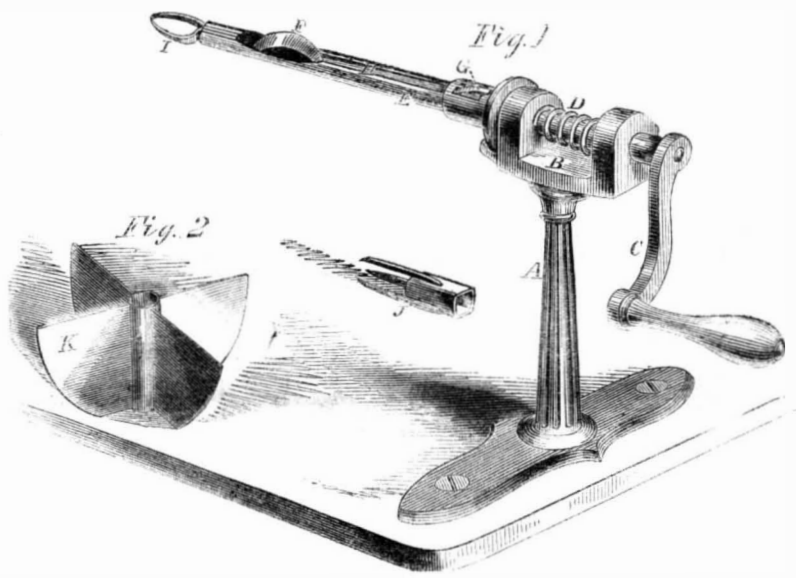
The temperature of the baking chamber may be controlled by means of the upper dampers, as by withdrawing them more or less, we open their passsges into the flues, and allow more or less of the heated air, steam, &c. to escape.

The bread to be baked is to be supplied to the shelves of the carrier through the supply-opening, E, the carrier being supposed to have an intermittent movement imparted to it such as will run each shelf in succession up to the opening, E, and then suffer it to remain long enough to receive its supply of dough. As the shelves pass upward into the baking space, their dough will be subjected to the action of the heat, and will be baked within a vaporized atmosphere. As the shelves successively pass by the opening, F, the bread on them may be removed from them through the latter opening.

The advantages of this improved oven are, great economy in fuel, the bread is baked without being smoked or injured in the least, and both evenly and thoroughly.

This invention was patented Feb. 1, 1859, and any further particulars may be obtained from the inventor by addressing him as above, where an oven may also be seen in operation.

ALCOTT'S APPLE CORER.



Ever since that little affair between our common mother and the snake, mankind have been fond of apples, and the numerous varieties into which the primeval apple has ramified itself is truly surprising. But, as if to show the vanity of all earthly things and how the sweets are mixed up with the bitters (but the sweets predominate), even the sweet apple in common with the sour crab has a bitter core, which, although of great use to the apple, for it holds its seed, is of so little use to us that we actually invent machines to cut it out. The subject of the present invention is one of these, and one that cuts out the core cleanly and well. At the ends the core is very small, gradually increasing in size towards the center, where it bulges out quite extensively compared to the modest manner in which it commences at the stalk and end. Now, a machine which will cut out the core, making a round hole all through the apple, will, of course, waste much apple, and if the diameter of the core at the ends be taken as a gage, the hole at the center will not be cut out. A. N. Alcott, of Gowanda, N. Y., has therefore invented an apple-corer which cuts out all the core without wasting the juicy flesh of the apple.

Fig. 1 is a perspective view of it, standing on a table or board. It consists of an upright post, A, on the top of which is a bearing, B, for a tubular shaft, E, that is kept in its place by the spring, D, and that can be rotated by the handle, C. To the end of E is secured a cutter, I, that is formed of two small bent knives. The apple being placed against these while they are being rotated, they quickly cut their way through it, separating all the core except the center. In this tubular shaft, E, lies a curved knife, F, pivoted through its lever handle, H, to E, and F can thus be made to project or lie flush by operating the other end of H by sliding the cap, G. The apple, when partly cored by I, is pushed on E, until its center comes over F which is then pushed out, and, of course, cuts away all the core.

This machine may also be made into a parer by placing the three-pronged holder, J, over I and placing the apple upon it, it can be pared very quickly by hand, as the hand has only to move toward the opposite end of the apple, following the curve of its surface. For quartering, the device seen in Fig. 2 may be used; it is very simple being nothing more than four plates of metal, K, sharpened at their edges and attached to and radiating from a central vertical tube. The apple is pressed on this, the core falls through the central tube and the quarters between the knives, K.

It was patented Feb. 22, 1859, and the inventor will be happy to give any further information, upon being addressed as above.

A Healthy Sign of Progress.

It is one of the signs of true progress to witness the present activity of inventors. As a marked indication, we may refer to the fact that for the week ending the 26th ult., forty-two applications for Letters Patent were made through the Patent Agency Offices connected with the Scientific American.

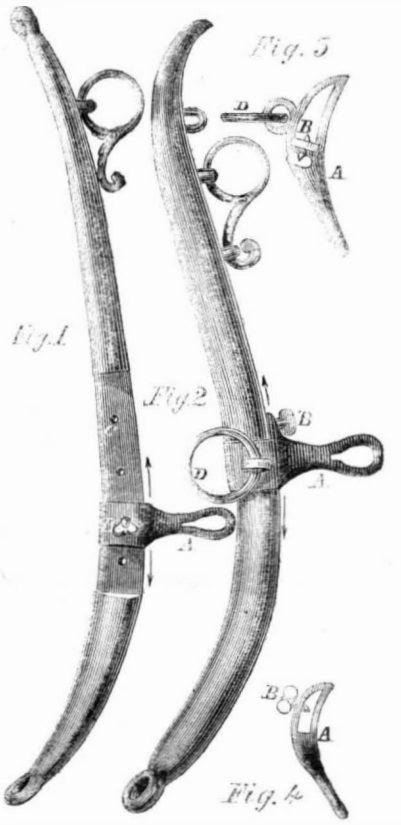
Mahogany for Ship-Building.

Some experiments have recently been made at Bordeaux, France, to test the strength of oak, teak, and mahogany. A stick of each kind of wood, four inches square, was placed crosswise in a machine for testing the strength of ships' cables, and a ring secured to its center. A strain was applied to it; the oak broke at a strain equal to 3,960 pounds, the teak, with a strain of 7,260 pounds, and the mahogany, with a strain of 7,480 pounds.

The foregoing given by one of our cotemporaries with an admonition to employ mahogany in place of oak for ship-building.

There must be something wrong about these statements, as American white oak is much stronger per square inch than the stick four-inch square experimented with at Bordeaux. The cohesive strength of white oak per square inch cross section is 11,500 pounds, mahogany, 21,000 pounds. It is well known that mahogany is stronger than oak, but it is too expensive to use for ship-building.

Cogswell's Improved Hames.



The shafts of different vehicles vary in height, and horses are by no means all of the same size. Now it is important for the horse when drawing a vehicle, that the line of draft from the traces should always come in the same place on the horse, which cannot be the case when the eye is rigidly attached to the hame, for if it be properly set for one horse or vehicle, it is obvious that it must be far from correct for another horse or vehicle.

The invention we are about to describe, provides for this by making the eye adjustable to suit any circumstances or occasion.

Fig. 1 is a carriage hame, light and elegant; a recess is made in it as seen at C, and the slide, A, to which the trace is attached, can be adjusted and secured to the desired position by the screw, B. A side view of this slide is seen in Fig. 4. Fig. 2 shows the common team hame, provided with this improvement., which slides on the common hame either up or down as indicated by the arrows, and can be secured by the screw, B, which in this instance is placed through a tongue in the side of A, and not as in Fig. 1. To the slide in the team hame a ring is attached, to hold the pole-straps of the harness; and the whole slide is seen in Fig. 3.

The inventor of this improvement is Henry Cogswell, of Greenwich, N. Y., who will be happy to furnish any further information upon being addressed as above. The patent was dated Feb. 15, 1859.

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Scientific American.

NEW YORK, APRIL 2, 1859.

REMOVAL.

The Scientific American *Office has removed from its old location,* 128 *Fulton st.* (*Sun Building*), *to No.* 37 *Park Row* (*Park Building*), *where all letters, packages, and models should hereafter be addressed. Entrance is had to the office also at No.* 145 *Nassau st. Munn & Co.'s American and European Patent Agency is at the above office.*

The Bells.

What an association of ideas crowd upon the mind as we reflect upon this subject! The very name of "bells" is hallowed by the uses to which they are applied, and their sounds are replete with touching recollections. The "solemn Sabbath bell," the "curfew bell," the "alarm bell," and the "merry marriage bell," are striking terms, which indicate their purposes and qualities. The chime of bells chaunting swelling notes of sacred melody—the palpitating alarm bell giving warning of a destructive conflagration—and the curfew bell tolling the hour of departing day—thrill our hearts with emotions as varied as their sounds. Church bells originated in Italy; and of all the instances of the power of bells to touch a sympathetic chord within the human heart, the most moving is the tradition told in connection with the peal of Limerick Cathedral, in Ireland. These bells are said to have been brought from a convent in Italy, for which they had been manufactured by an enthusiastic native, with great labor and skill. This Italian, having afterwards acquired a competency, fixed his home near the convent cliff, and for many years enjoyed the daily chimes of his beloved bells. But in some subsequent political convulsion, the monks were driven from their monastery, the Italian from his house, and the bells were carried away to another land. After a long interval, the course of his wanderings brought the bell-founder to Limerick. On a calm and beautiful evening, as the vessel which bore him floated in the Shannon, he suddenly heard the bells peal forth from the cathedral towers. They were the long-lost treasures of his memory. Home—happiness—friends—all early recollections—were in their sound. Crossing his arms on his breast, he lay back in the boat. When the rowers looked around, they saw his face still turned towards the cathedral, but his eyes had closed forever on the world!

But leaving the sentimental part of this subject, we turn our pen to matters of more practical interest. Some European cities have obtained notoriety for their mammoth bells. Moscow, in Russia, has the largest, and weighs about one hundred tuns; "Big Ben," in London, weighs nearly sixteen tuns; there is one in Paris, which weighs fourteen tuns; and another in Erfurt, Germany, weighing eleven tuns, and said to be the finest toned bell in the world. We have no American bells worthy of mention on account of their size, but in tone they equal those of the oldest countries of Europe. We do not know who introduced the art of bell-casting into our country, but the reputation of the late A. Meneely, of Troy, N. Y., was very high as a bell-founder twenty years ago.

As large bells are very costly, every possible care should be exercised to render them as durable as possible. On page 222 of the present volume of the Scientific American, we briefly directed attention to this question; and in response, we have received a letter from Mr. G. W. Hildreth, of Lockport, N. Y. He says:—"The ordinary mode of hanging bells causes the hammer to strike in two places only, on opposite sides of the bell, and in a direct line, so as to eventually cut it in two. This result is only a question of time, averaging from three to five years."

In the year 1855, Mr. Hildreth invented a yoke for changing the striking surface of a bell, and by it a man can alter the stroke of the hammer to any other point in one minute, leaving the bell hung in the most perfect order, and thereby increasing the durability more than a thousand-fold. Such bells are now manufactured by Messrs. Jones & Co., of East Troy, N. Y.

This subject has brought to our recollection a fact in reference to hanging bells, described in our Paris letter on page 326, Vol. X. A large bell from England was in the Exhibition that year (1855), the neck of which was furnished with a spur wheel, by which its striking surface could be changed to the action of the clapper by a crank and pinions. That all bells should should be hung so as to effect such a desirable result, we believe no person will for a moment doubt, and yet we do not know where there is a single large bell in our country thus arranged. An immense annual expense is entailed in all our cities for the recasting of cracked bells, nine-tenths of which may be saved. We hope this presentation of the subject, will be the means of awakening public attention to a good reform in the method of hanging large and cheerful pealing bells.

Asphalt—Composition Roofing.

It is very desirable that many buildings should be constructed with flat roofs, for which common shingles are inapplicable, and tin too expensive. A composition for such a purpose, perfectly waterproof, easily applied, cheap, and durable in its nature, would be of great benefit. Quite a number of compounds have been tried for this purpose, some of which have failed to secure the desired ends, while others have been highly successful. A roofing compound of asphalt, coal tar, and sand has lasted for ten years on certain roofs, and is still as good as when first put on, while the same materials laid upon other roofs had to be removed within one year after being being laid, on account of cracks in the cement. Such success on the one hand and failure on the other with the same identical substances has occurred in every section of the country. As this composition roofing is about the cheapest known, it is highly important to discover what can be the cause of its want of success in any case, as it is very evident that if successful in one instance, it can be made so in all cases. It has been found by experience with such composition roofs, if laid upon a moist bed, or if the cement itself contains moisture or volatile oil, they are liable to crack and scale off. One or both of these causes, perhaps, contributed to the failure of the roofs alluded to.

To make such roofing, two or three layers of thick tar-paper should first be tacked down upon the boards, then brushed over with a thick coat of hot pitch, so as to render the surface smooth and expel all the air, to prevent air bubbles forming in the cement. When the pitch is perfectly dry, the asphalt composition is to be put on. This consists of 15 lbs. pitch, 25 lbs. asphalt, and 30 lbs. dry sand. The pitch is first melted, then the asphalt, as finely comminuted as possible, is added. This amount will answer for ten square feet in two layers; it should be boiled for two hours, and kept stirred during the operation, to expel all the volatile oil. When thus prepared, it is carried in buckets to the roof of the building, and poured carefully upon it in sections, set off with boards set on edge. Care must be exercised not to permit any of the sulphates of iron or sulphur to be mixed with it. A thin layer of tow or hair laid upon the pitch before the cement is poured on will render the roofing more elastic. Previous to its becoming dry, a layer of marble dust or ground chalk should be beaten into it, and on the top of this a layer of fine white sand and gravel. The object of this is to prevent the rays of the sun penetrating into the asphalt to soften it. Two layers of this composition should always be laid on—the top one after the other has become dry.

Common pitch will answer the same purpose as natural asphalt, if two pounds of coal tar is mixed with every twenty pounds, and five pounds of marble dust to every twenty pounds of dry sand. Such roofing can be very easily repaired if it cracks, but if sufficient care is bestowed in preparing and laying down the materials, no such repairs will be required for several years.

Canada Steamboat Law.

We are indebted to A. A. Wagner, Esq., of Windsor, C W., for a copy of the bill now before the Canadian parliament, for the better preservation of person and property in vessels navigating the waters of Canada. In several of its features, it resembles our steamboat inspection law, but it is more extensive in scope. In regard to the use of signals to prevent collisions on the lakes and rivers, it is exceedingly full and complete, and in this respect is superior to any statutes which we have on this subject.

It provides for a thorough system of steamboat inspection, and the examination and licensing of engineers. The boilers of steamers are all to be tested by hydrostatic pressure once per annum or oftener if necessary, as provided for by our law; and other provisions are of a similar character. In one feature this law is superior to ours, because ocean steamers and ferry boats are exempt with us from the rigid rules applied to other steamers, but this Canadian bill makes no such undemocratic distinctions.

It contains one peculiar provision, which we will quote, because it is very short and pithy. "Every steam vessel shall also be provided with a blow-valve and pipe attached to the boiler, to blow steam into the hold in case of fire."

This bill has been passed to a third reading, and is likely to become a law, as it is so good in all its particulars, and must make traveling in Canada more safe than it hitherto has been.

About the Winans' Steamer.

In commenting upon this vessel on page 110 of the present volume of the Scientific American, we used the following language respecting its propeller wheel:—"One great advantage of the common screw propeller over the paddle-wheel is its very limited size; now, it appears strange to us that this very advantage should have been overlooked in the design of this small vessel; with its huge screw wheel, it must offer a great amount of unnecessary resistance." We learn from the Philadelphia *Ledger* that one half of the buckets of this wheel have been removed, and that the speed of the vessel upon a late trial had been "materially increased" thereby. Fourteen feet are to be added to the hull on each side of the wheel—making twenty-eight in all—just two feet less than the amount we recommended. We still insist that the wheel is too large and in the wrong position; in short, it is a most unscientific propeller in every sense of the term.

American Oilcloth.

We learn from the Philadelphia *Ledger* that the oldest concern in the United States for the manufacture of oilcloths is that of J. Potter, located in the above city. About 110,000 square yards of floor-cloth, 300,000 yards of stair-cloth, and 350,000 yards of table-cloth, are made in it annually. It is also stated that the manufacture of American carriage-cloth has been so much improved during the past four years, that it now surpasses any that is made in Europe.

Machine for Casting Type.

David Bruce, Jr., of Brooklyn, N. Y., obtained a patent, June 7, 1845, for the above purpose, and for which he now seeks an extension. The patentee is to be heard at the Patent Office, on the 23d of May next, and objections to its extension must be set forth in writing at least 20 days before the day of hearing.

The New Postmaster-General.

A correspondent of the *United States Gazette*, in speaking of the appointment of the Hon Joseph Holt to the office of Postmaster-General, says:—"No division of sentiment exists as to its fitness and excellence. His past career has been identified with the bar, where he acquired fame as an orator and jurist in the southwest, and that sort of distinction in the profession which enabled him to retire from it in full maturity of his powers, with all the conceded honors which a lifetime has not often achieved. After withdrawing from practice, he traveled in Europe several years, and then settled in Kentucky among his own kindred and connections by marriage, both of the families being among the oldest and most distinguished families in the State. He was invited by Mr. Buchanan to take the Commissionership of Patents, and reluctantly yielded to the solicitations of some of his friends, who knew his value and rare abilities. In that responsible office he acquired a reputation never surpassed by any of his predecessors, and his opinions stand out from the ordinary routine as examples of clear and conspicuous reasoning and beauty of diction which give relief to that dreary monotony which pervades official documents. My attention was first attracted to his remarkable powers by accidentally reading his justification for extending an india-rubber patent, in which the whole range of art, inventors, and their rewards, was treated with a masterly skill and culture which at once established his position here with those who, like myself, only knew him through this public medium."

The report referred to above was published on pages 350 and 358, of the last volume of the Scientific American, and attracted an unusual degree of attention at that time.

A correspondent of the New York *Tribune* also says:—"He sets about his work like a man who is in earnest. He may be seen at the Department before the usual hour for the gathering of the clerks, and seems already to have inspired them with at least the policy of reforming their habits of indolence and carelessness. Taciturn, observing and industrious, he is not likely to be bamboozled as some of his predecessors have been by the todyism of subordinates, whose chief aim is to get possession of the Postmaster-General, and then use him for selfish or doubtful purposes. He is difficult of approach, and not at all given to familiarity, so that every man will be expected to keep his place, and to perform his duty. In starting the retrenchment which has already been introduced, he has exhibited a perfect indifference as to the clamor of politicians, which may be considered a good sign."

The Business at the Patent Office.

The business of the Patent Office is now going forward with the usual vigor. The law empowers the Chief Clerk to act as the Commissioner of Patents whenever there is a vacancy in the Office. We make this explanation for the information of those who have written to us, under the seeming misapprehension that no business could be done until Mr. Holt's place is filled by a new appointment.

Sugar Cane Cutter.—Since the appearance of the article on page 204 of the present volume of the Scientific American, under the caption of "Sugar Plantation Inventions Wanted" a great many correspondents have written to us proposing plans to meet the wants of the planters, as thus indicated. Many of them desire more information upon the subject. We hope our correspondent at St. James, La., will allow us to publish his address, so that these enquirers may have an opportunity to get some practical facts necessary for the elucidation of this subject.

Sleeping Cars.—The Baltimore and Ohio Railroad Company have placed several sleeping cars upon their road—one for each of the western express trains.

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History and Mystery of a Teacup.

We possess a teacup which we value very much—in fact, it stands upon the top of our private bookshelves—and is the cause of many a pleasant hour's soliloquy. The reason that we like that teacup is, because there is a story connected with it, which we will shortly relate. It is not an ancient piece of pottery, dug from the ruined cities of Herculaneum or Pompeii; it was not found in a mummy's sepulchre, or under the buried stones of Babylon or Nineveh. Ptolemy never saw it, and Sennacherib had no idea of its existence. So we do not value it for its antiquity. The design is very rude; it consists of a square house on the borders of a lake, a bridge crosses the water, and three very unhuman figures are placed upon it; doves, or rather patches of blue representing them, are supposed to be flying in the sky, and the figures a vivid imagination could conceive to be two lovers, and the young lady's father. The trees are composed of round dabs of color upon straight lines, and a boat upon the water looks not unlike a square box, with a shingle for a sail. So we do not value the cup for either the accuracy of the drawing or its ancient worth. What, then, do we value it for? We will let the secret out now. Once upon a time, we had a notion—peculiar, but pleasant—of going into the state matrimonial. Bright notions of domestic bliss crossed our brain; and two pair of feet instead of one we saw in perspective upon our lovely fender; thoughts of buttons always on, and no strings ever off, flitted before us; and in a moment of enthusiasm, we began to furnish our home. Our first purchase was at an auction, and it was the identical teacup which is the subject of this meditation; hence our regard for it, and the veneration with which we look at it; it solaces our bachelor hopes and fears, for we are not married yet. "Why?" is no matter. Let us to our solitary cup of tea—we mean, teacup.

The regard we have for this teacup is based on this domestic incident, but has been strengthened by mature contemplation, for simple thing as it is, it is a monument of industrial skill, and a triumph of the ceramic art. From continued observation, we began to ask ourselves, "How was it made?" "where?"—and "from what material?" And having ourselves been pleased with the result of our research, we think it not unlikely that others may be so too.

At the very outset the name of "crockery" is suggested, which is most likely derived from the Irish word, *crock*, as "pottery" is from *pot*, and "porcelain," from the Portuguese word *porcellana*, a cup; thus the American for porcelain would be "cupper's ware," and the manufacture of it "cuppery." The manufacture of porcelain was first known and practised by the Chinese, who called the fusible ingredient of the ware, (which is a quartz rock calcined to deprive it of its water of crystallization and reduced to a very fine powder), *pe-tun-tse*. The Portuguese being the first European nation who visited China, naturally called the ware the name which had in their language a connection with its uses. From these words we may infer the fact, that all pottery was first used for cooking, and that man, having got the meat, next turned his attention to the utilitarian purpose of—making a vessel in which to cook it. And what so natural as the plastic clay that was to be found in almost every locality, a material that could be molded so easily when moist, and which retained its shape so well when dry? It was the very thing! It no doubt required no discovery, but was self-suggestive. The first mention we can find of the use of clay is in the third verse of the ninth chapter of Genesis, where it reads—"And they said to one another, Go to, let us make brick, and burn them thoroughly; and they had brick for stone, and slime for mortar." From the familiar style of the allusion to "brick," it is evident that the uses of clay were well known at that early age of the world's history.

In a very round-about way we have at last got to a starting point, namely, clay. The chemist will tell you that it is silicate of alumina, and the technologist will inform you of the fact that, to be properly plastic, it should consist, mainly, of one-third part of alumina, and two-thirds silica; that it owes its plasticity to the alumina, and that it ceases to be called "clay," when the silica is present in more than its fair proportion. It should be free from iron, so that it may burn white, instead of red, but the small quantities of chalk and magnesia often found as impurities do not much deteriorate its quality. The clay family is a pretty large one, and the relations—first, second, and third cousins—are found all through the mineral kingdom. They are descended in a direct line from Granite, the most ancient of rocks, who, having suffered by exposure to the weather and the constant mutations which are going on in nature, gradually allows his constituents, Messrs. Quartz, Feldspar and Mica, to become amalgamated into clays of various kinds; the purest and of course most respectable is Mr. Kaolin, or China clay, who may be called the aristocracy of clayocracy. This is derived from the decomposition of Feldspar, the change consisting in a removal of the alkali, potash, with part of the silica, and the addition of water; Mr. Feldspar being composed of thirteen-twentieths of silica, four-twentieths of alumina, and three-twentieths of potash. The Dresden porcelain is made from kaolin found in Saxony; the French from kaolin found at St. Yrieux-la-Perche, near Limoges; the English is found in Cornwall, and the only American deposit at present known is at Wilmington, Del. There is plenty in China and Japan, the very name "kaolin" being a corruption of the Chinese word *kau-ling*, (meaning *high-ridge*.) the name of a hill near Jan-chan-fu, where this material is obtained. Common clay, soap-stone, and meerschaum, are various degrees of relationship to kaolin; and our teacup is made from a white variety of the former, called "potter's clay."

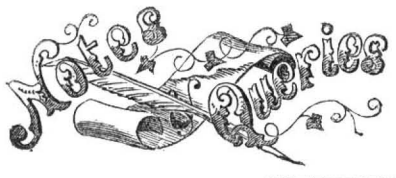
[Concluded next week.]

Flax Refuse—A Substitute for Rags.

The difficulty of procuring rags, the raw material from which paper is made, has become a matter of importance to all connected with literature, and many substances have been tried with different degrees of success; none, however, have been sufficiently successful to be commercially available, excepting wheat and oat-straw, and cotton waste, and these have been found only partial and imperfect substitutes. Mr. Houghton has recently patented a process by which he is able to take flax refuse (stuff which is burned to be got rid of, and the value of which is the cost of fetching it) into pulp equal in quality to the pulp produced from the best linen rags at a cost of from £28 to £30 a tun.—*Family Herald, London.*

[About three years ago we saw some very good wrapping paper made from refuse flax at one of the rope-works near this city. As there was quite a mountain of such refuse at the establishment, it, no doubt, would have been a great advantage to the owners of it, had they been able to make the paper at a paying price, but we understand they were not able to do so. There are thousands of loads of such refuse made at our rope-works annually, and it is only used for manure. We do not believe that it can make as good paper as linen rags because it contains much less fiber.

A number of experiments have been made by Dr. Angus Smith, in determining the impurity of the atmosphere, which have been published in the Glasgow *Practical Mechanic's Journal*. He has discovered that in a closely packed railway carriage there is one grain of organic matter in every 8,000 cubic inches of air—an unhealthy atmospheric condition, certainly.



*** PERSONS who write to us expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

WE are unable to supply several numbers of this volume; therefore, when our subscribers order missing numbers and do not receive them promptly, they may reasonably conclude that we cannot supply them.

J. H., of Ky.—There is one printing establishment in this city where type cast in words is used extensively. We are not aware of any advantage resulting from its use. Type thus cast is quite an old application, but has never come into general use.

H. E. G., of N. C.—The patents obtained for the manufacture of Kerosene, do not cover the obtaining of paraffine from mineral oils. You may use any substance you chose for purifying such oils. Common and well known apparatus used in candle works, is employed for extracting the parafine.

D. C., of Ky.—We have directed public attention on several occasion to the production of an indelible pencil. You should try and invent one to suit yourself.

L. G., of N. Y.—Thin steel blades have been proposed for blades of paddle-wheel. We believe that the propeller is the best device for boats on canals; the arrangement of your blades is not so good.

G. R C., of N. Y.—Resin gas at $7 per 1000 cubic feet is as cheap as coal gas at half the price, because it is about double the density.

N. H. B., of N. Y.—The pressure of a fluid is not equal on all the sides of a vessel; there is no pressure exerted on the top-side or lid; the pressure increases downward on the sides of a vessel in proportion to the depth of the column. A tube filled with water and sunk in the sea, with its ends bent upward to the surface, will maintain its form because the pressure inside will then be equal to the pressure outside; a flexible tube is not well adapted in its nature for such an experiment.

J. J. C., of Ga.,—A person who can weld steel or iron perfectly, without the use of fire, richly deserves twice fifty dollars for his secret; it has never been patented, as far as we know.

H. C. B.,—of——. If you will send us your Post Office address, we will write to you about your spring lock for whiffle trees.

C. B. F., of Ohio, and W. C. E., of N. J.—The first American cent was coined about 1785 in Vermont, and had on the obverse a sun rising from behind hills, and a plow in the foreground—legend, *Vermontensium Res Publica*, 1786: reverse, a radiated eye, surrounded by thirteen stars—legend, *Quarta Decima Stella.*

John C. Dial, of Columbia, S.C., wishes to correspond with the manufacturer of Lemuel Smith's patent smut machinery.

G. F. U., of N. Y.—Cast iron head-pieces and monuments, with and without enameling, have long been made. There would be nothing patentable in making sign letters of plastic material in molds. They have long been made. You can purchase them at some of the crockery stores.

M. M. H., of N. H.—A British work on Heat, by Professor Macquorn Rankin, is reliable, but it is very abstract and dry. The ship berths intended to prevent sea-sickness are not used on vessels sailing from this port. Iron hammered at a high heat is not quite so strong as that hammered at a red heat, but it is customary to hammer and roll iron heated to a white heat until it becomes black on the surface. Machines for making wrought iron nails have not been extensively used.

A. C., of C. W.—We cannot refer you to any party who can furnish you with a machine for finishing and rolling morocco.

R. W., of Texas.—Your article on the trade winds would not suit our columns, for the reason that it is not a subject of much interest to many of our readers; nevertheless, we thank you for it.

A. F., of Mass.—We are of the opinion that a patent, if obtained under the circumstances you detail, would not be valid in law.

S. P. M., of Me.—You can remove ink blots from paper with citric acid, or a weak solution of oxalic acid. Apply it carefully with a sponge.

G. G. N., of Mass.—You can get a treatise on bridges by addressing Wiley & Halsted, Broadway, this city.

L. E. D., of Conn.—Carmine will make lac varnish red in color; verdigris will make it green; and ultramarine, blue. Write to S. K. Baldwin, Laconia, N. H., about a water-wheel.

J. F., of Va.—Tin plates are never soldered before they are plated. You can solder iron plates with common spelter if you moisten the edges to be soldered with the chloride of tin before applying the soldering tool.

C. H. S., of N. J.—To dye wood a red color, boil it in a strong solution of Brazil wood, with a little alum; to dye it blue, boil it in a weak liquor of logwood, containing a little blue vitriol. This latter color will not be very bright, but the method is simple. The wood should be white and free from rosin, or it will not take these colors. To dye would black, boil it in a strong solution of logwood and a little copperas.

H. C., of N. B.—If you will refer to Vol. IX., page 182 SCI. AM., you will find a description of the method of enameling iron. It would require too much space to describe it in this column.

J. C. L., of Pa.—It is not an easy thing to remove India ink from the human flesh. If you will refer to page 55, of this volume, you will find a note on "tattooed skin," which conveys the information you want. You will find it an unpleasant experiment to perform.

J. B., of Geo.—A cement composed of linseed oil and chalk would answer well to close up the cracks in your roof. We are not able to refer you to any one who would be likely to embrace your proposal about a saw-mill and tannery. Perhaps an advertisement in our columns might lead to a negociation.

K. Z. G., of Ill.—D'Aubisson's work on hydraulics is an able treatise. We think you can procure it of Wiley & Halsted, of this city. In reference to Boyden's turbine, address him at Lowell, Mass.

G. F. D., of Geo.—You will find your boiler much improved by encasing it in a jacket, to prevent the condensation of the steam; your cylinder would be much improved also by a similar arrangement. If you can change your feed-pipe from the front to the back end of the boiler, without much additional expense, we advise you to do so. The greatest evaporative effect will be obtained from increasing the fire surface.

H. P. B., of N. Y.—Your views in regard to gilding are gratefully received, but the details of the process are not so simple as the ordinary practice.

M. L. P., of Tex.—You are entirely in error about the pressure of steam on the valve, as is most conclusively proved by the concluding paragraph of your letter: for if the ports of the seat and cup of the valve were all stopped up, and the faces of the valve and seat fitted well enough to perfectly exclude the steam from between them, the effective pressure in the valve would be due to the whole area of the valve.

L. G., of C. E.—If your bear has been in a state of torpor, of course he does not use his substance up as fast as when awake and lively, so that it is not likely that he would change all his body in thirty days.

A. B. J. F., of Ind.—We would gladly send you the name of our southern correspondent who wrote us from St. James, but we have mislaid his letter and forgotten his name; besides, he did not authorize us to give his name to any one.

W. C., of Mass.—We thank you for your generous compliment. Please to send us that useful information on the hardening and tempering of steel. We would like it for publication.

P. S. S., of North Westport.—In what State do you reside? We have received your model and would write you if we could do so; but you have not given us this chance, through neglect.

C. N. M., of Pa.—The mastic cement for the fronts of houses is composed of 14 lbs. of clear, dry sand; 14 lbs. brick dust, and half a pound of litharge moistened slightly with boiled linseed oil. The brick wall receives two or three coats of oil before this cement is laid on. There is no work published in this country on the art of plastering.

C. O. F., of Me.—The specimens of hardened lumps of clay which you send us are called "clay-hurleys," and they are formed by the earth sticking to a bit of twig or (as in the case of those we received) a shell, and this, rolling down the hill, becomes rounded, and the sun hardening it, it assumes the appearance of a pebble, in which the bit of twig or shell is completely entombed.

P. F., of Cal.—In calculating the power of the engine to which you refer, the circumference of the cylinder was taken from a table instead of the area, hence the error. It would be well to use the divisor, 44,000, for a horse power, instead of 33,000, because we have always to deduct a fourth for friction. The horse-power of an engine with cylinder of 7 inch bore, piston 280 feet velocity per minute, and carrying 50 pounds pressure on the square inch is 12.24 after deducting a fourth from the nominal power.

O. P. S., of N. Y.—Paddles for the wheels of steamers set lower on their axes, and having one side heavier than the other to make them enter the water vertically are quite old, and were illustrated in our history of propellers, Vol. V., SCI. AM.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, March 26, 1859:—

A. W., of Pa., $25; A. P., of Wis., $30; T. M., of N. Y., $30; M. B., of N. Y., $30; N. P. S., of N. H., $25; H. S., of N. Y., $50; D. A. W., of N. Y., $25; J. H., of Pa., $30; W. W. J., of Vt., $30; J. F. H., of Ill., $10; R. B., of Ill., $25; J. G., of Ga., $20; B. & B., of Ill., $47; C. & S., of Conn., $25; G. & T., of N. Y., $25; W. H. S., of R. I., $55; J. C. S., of Mass., $50; W. D. S., of N. H., $25; W. H., of Ill., $30; R. B. N., of Ala., $25; E. B., of Pa., $30; L. A. B., of N. Y., $12; D. L. H., of Ct., $25; E. R. D., of N. Y., $25; D. G. F., of Wis., $30; J. W. T., of Vt., $30; H. T. D., of O., $25; J. B., of N. H., $30; A. B. C., of Ga., $30; L. & P., of N. Y., $30; E. P. T., of N. J., $25; R. & S., of N. Y., $25; H. A. R., of N. Y., $57; J. R., of Pa., $35; G. M., of Conn., $35; I. P. T., of Md., $65; D. L., of Mass., $55; D. R. E., of Pa., $30; A. D., of N. H., $25; J. B., Ill., $35; J. R., of N. J., $30; L. B. T., of Mass., $25; J. A. T., of N. Y., $25; D. H., of Ill., $30; W. & M., of N. Y., $30; J. R. H., of N. Y., $25; L. & M., of N. J., $25; S. D., of N. Y., $55; J. L. N., of Ill., $30; C. J., of N. Y., $55, L. H. T., of R. I., $10; S. & J. T., of Pa., $30; D. J. O., of Pa., $30; S. B., of N. Y., $30, N. P., of Ind., $25; J. W. W., of Pa., $25; J. F. & E. P. M., of N. Y., $25; J. S., of Ind., $25; L. C., of N. Y., $30; C. C., of N. Y., $40; A. B., of N. Y., $145; W. A., of N Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, March 26, 1859:—

W. D. S., of N. H.; A. W., of Pa.; H. S., of N. Y.; W. A., of N. Y.; J. S., of Ind.; R D., of Vt. (two cases); L. & P., of N. Y.; N. P. S., of N. H.; G. & T., of N. Y.; L. & M., of N. J.; W. H. S., of R. I.; J. R., of Pa.; J. R. H., of N. Y.; L. A. B., of N. Y.; D. A. W., of N. Y.; J. F. H., of Ill.; L. B. T., of Mass.; T. & T., of N. Y.; C. S., of N. Y.; B. & B., of Ill.; A. B., of N. Y. (two cases); H. A. R., of N. Y.; C. & S. of Conn.; N. P., of Ind.; E. R. D., of N. Y.; J. P. T. of Md. (two cases); R. B., of Ill., A. Y., of N. Y.; R. & S., of N. Y.; J. A. T., of N. Y.; S. D., of N. Y.; J. C. S., of Mass.; E. P. T., of N. J.; J. M. W., of Pa.; D. L. H., of Conn.; R. B. N., of Ala.; H. T. D., of O.; C. J., of N. Y.; J. G., of Ga.

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CALIFORNIA AGENCY FOR PATENTS—WETHERED & TIFFANY, San Francisco, will attend to the sale of patent rights for the Pacific coast. References:—Messrs. Tiffany & Co., New York; Wethered, Brothers, Baltimore; George W. Ponds & Co., Boston. 23 13*

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A MESSIEURS LES INVENTEURS—Avis Important.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence.
MUNN & CO. Scientific American Office, 37 Park Row, New York.

Zur Beachtung für Erfinder.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an
Munn & Co.,
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Auf der Office wird deutsch gesprochen.

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Science and Art.

New Floor Covering Material.

The production of a good, durable and cheap covering for floors, embracing the advantages of softness and elasticity has long been sought for. The London *Mechanics' Magazine* states that a very original material for floor covering has recently been patented by Mr. Dunn, member of C. Goodyear's India-Rubber Company, London, which meets all these conditions. It consists of a composition of cork, flock, cotton, wool, and other fine fibrous materials of various colors, mixed with india-rubber. These are spread on a canvas back and embossed. The result is a material of great permanence and beauty, having all the softness of a carpet, with the elasticity and noiseless tread which constitute the beauty of a real "velvet pile Brussels."

New Smut Machine.

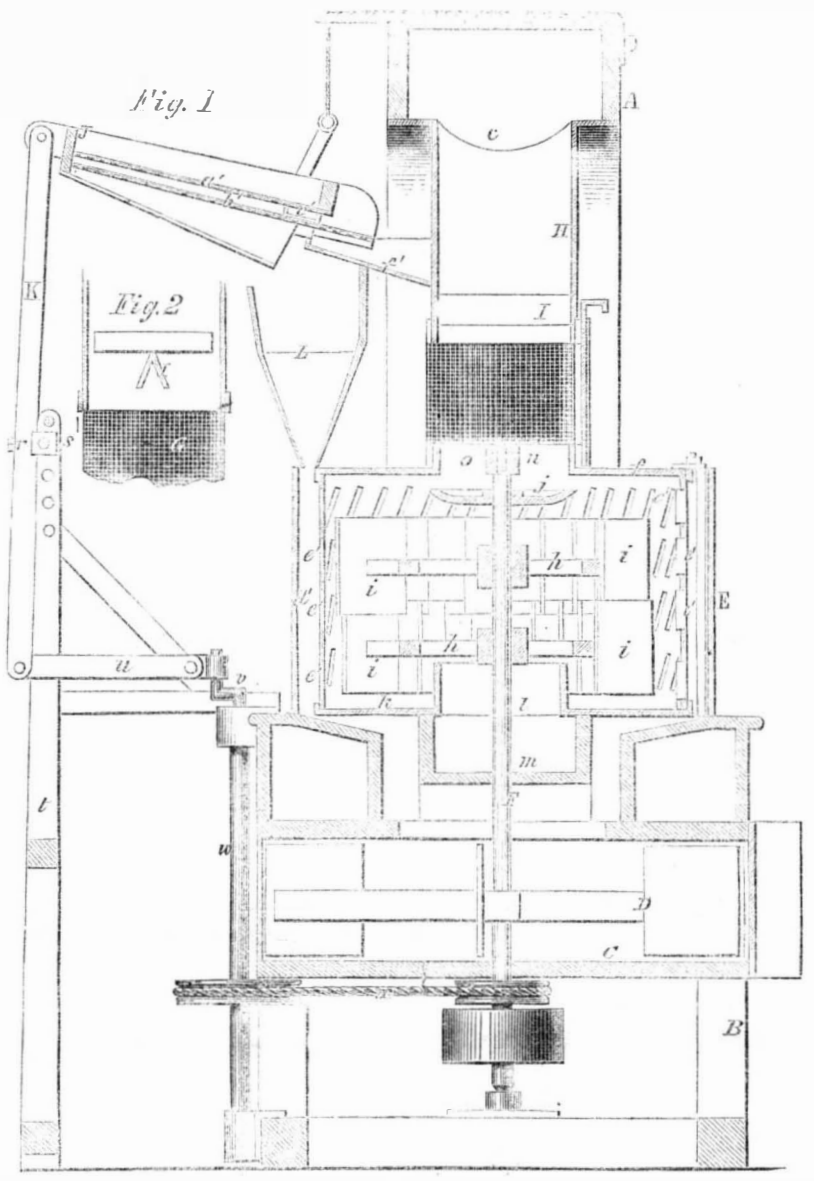
There is nothing in the range of common substances which is so full of pleasure as flour. It is agreeable to the touch and taste and sight, and whenever one sees a barrel of fine flour opened, the impulse is to bury one's hands in it and move the fingers among its fine smooth particles. It is so suggestive, too, of bread—the staff of life, and cakes—the ivory handles and silver mounting to the same. Let the fable say what it likes, "There is nothing like *flour*," say we. But flour would lose these pleasant qualities and half its value, were the grains of wheat not cleaned before being ground in the mill, and ridded of all impurities; the parasitic fungus, "smut" being the chief of them. For this purpose, the smut machine has been invented, of which there are many forms and kinds; the subject of our engravings being that invented by J. A. Woodward, of Burlington, Iowa, which also acts as a seed separator. This machine was patented December 21, 1858. In our engravings, Fig. 1 is a vertical central section of the whole machine and Fig. 2 is a detached cross section of the deflecting bar and shoe, taken in a line at right angles to Fig. 1.

The machine will be well understood by our description of the operation:—

Power is applied to the shaft, F, in any proper way, and rotary motion is communicated therefrom by means of the belt, *x*, to the shaft, *w*, that by means of the crank, *v*, and connecting rod, *u*, gives motion to the bar, *k*, and shoe, J. The bar, *k*, is pivoted to the upright, *t*, by the pin, *s*, and it is capable of being lengthened or shortened by the set screw, *r*.

The grain to be cleaned falls on a screen, *a'*, in the shoe, J, and passes through this screen, the large foreign substances passing off through the spout, *c'*. The grain cannot pass through the screen, *b'*, but is conducted by it and the spout, *f'*, into the cylinder, H, and it falls into the scourer, E, being divided in its descent by the bar, I. The cockle and fine seed pass off the inclined bottom of the shoe into the hopper, L, and thence through an opening, into the fan-box, C. The fan, D, causes a blast to pass vertically upward through the spout, *m*, and scourer, E, and the same fan also causes a blast to pass through the spout, A, a current also passing through the wire cloth cylinder, G, upward through the cylinder, H, into the part, *c*, of the blast-spout, A. The grain therefore is subjected to a blast as it descends into the scourer, and the bar, I, divides or scatters the grain in its descent, so that the blast—which will have a whirling motion in the wire cloth cylinder, owing to the junction of the upward current from the scourer—will effectually take up all light foreign substances into the spout, A. The grain, as it enters the scourer, E, (through the opening, *n*, the flange, *o*, of the top-plate, *f*, supporting G,) will be deprived of all loose dirt and smut, which is an important feature, as it lightens the work of the scourer and prevents it from grinding the smut and dirt into the eye of the grain. The grain is spread by the concave, *j*, and operated upon by the wings or beaters, *i*, in a very effectual manner, the position of the beaters operating in a very direct manner against the grain, so as to subject it to the greatest possible amount of attrition without breaking it; the dirt and smut passing through the perforations, *e'*, and through *e''* into the fan-box. The beaters are attached to F by arms, *h*. The cleaned

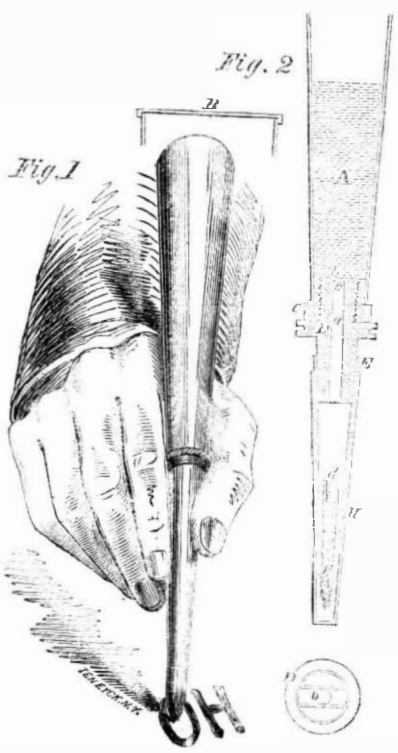
WOODWARD'S SMUT MACHINE.



grain passes down a spout into the lower part of A, where it is subjected to a second blast, and falls away in a perfectly clean state. All light grain is carried by the blast to one discharge spout and the heavier into another, the separation of the grain depending upon the adjustment of a gate in the lower part of A.

Any further information concerning this excellent invention may be obtained by addressing the inventor as above.

Hoit's Marking Brush.



The trouble of dipping the brush into ink or paint and the consequent mess which it produces, are entirely avoided by the use of the invention which is illustrated in the engraving, Fig. 1 being a perspective view in use, and Fig. 2 a vertical central section reduced. A is a cistern of sheet-brass, tin, or iron, closed at the top by a cover, B, and forming a handle of the brush. Its lower end is open and provided with a bushing, C, that holds the hollow screw, D, and at the same time strengthens A. Through D is a passage, *a*, the top of which is protected with a cross-piece, *b*, having a projection, *c*, to regulate the flow of ink or paint. To D a tube, E, is secured, and the hairs, F, that form the brush being attached to the outside of a small tube, G, when G is pushed down E, the hairs are held tight and a passage left for the ink or paint to flow to the brush and cap or tube, E. Ink is introduced into the cistern by turning it upside down, and taking out D, and when the desired quantity is placed in, the whole can be screwed up air-tight by D, the valve, *c*, closing the passage, *a*. In order to use the brush, the passage, *a*, is opened by unscrewing D a little, and any quantity can be supplied to the brush, and at any speed.

The inventor, L. B. Hoit, of New York, will be happy to furnish any further information upon being addressed at 335 Broadway, room No. 34. It is a convenient little thing, and was patented Feb. 22, 1859. We have tried it, and can recommend it to all shipping clerks, freight agents, and others who have to do any marking quickly, or carry marking utensils from one point to another.

Duty of Steamships.

A committee of the British Association for the Advancement of Science—of which W. Fairbairn was chairman—appointed to consider the above subject, recommends that all the owners of steamships adopt means to register their efficiency. The rule which they lay down for testing vessels, is to multiply the cube of the speed by the square root of the cube of the displacement, and divide the product by the consumption of fuel per hour in hundred-weights. Thus, if a steamer, A, performed a voyage of 7,200 miles in 652 hours—on an average speed of 11.04 knots—and the consumption of coal was 47 cwts. per hour, and the mean displacement 2934 tuns. The co-efficient of dynamic duty indicating the merits of the performance would be—

$(11{\cdot}04)^3 \times (2{,}934)^{\frac{2}{3}} \div 47 = 5{,}870.$

Suppose another steamer, B, having a displacement of 840 tuns, average speed 12·78 knots per hour, consumption of coal 50·3 cwts. then the co-efficient of duty is—

$(12{\cdot}78)^3 \times (840)^{\frac{2}{3}} \div 50{\cdot}3 = 3{,}693.$

In the first case A performs as much work with 1 cwt. of coal as B with 1 1-16th cwts. It is only by computing the amount of coal used, with the displacement of the vessel and its speed, that we can arrive at any data regarding the efficiency of steamers. The cause of superiority in one vessel may be in its form or the machinery, but, whatever it may be, there is no possibility of finding this out, unless the displacement, speed, and coal consumed, are known. A series of statistics of the performances of steamers under such a test, would lead to a close investigation as to the causes of superiority in one over another, and the result would be a general adoption of those improvements by which advantages were secured. At present there are steamers which do the same duty as others with one-fourth less fuel, but no person can really tell whether this is owing to their models or machinery or some other cause.

MECHANICS

INVENTORS, MILLWRIGHTS, FARMERS AND MANUFACTURERS.

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